

### Remarks

Claims 1-9, 11-14, and 20-29 are pending in the application, of which claims 1, 20, 21, 22, 27, 28, and 29 are in independent form. Applicants have cancelled claim 10. The subject matter of the amended and new claims is encompassed within the scope of the originally filed application and should, therefore, not raise new issues that would require further consideration or searching.

Claim 1 has been amended to recite "isolating for use in agricultural applications granules of superabsorbent polymer product having a granule size that is between about 5 mesh and about 25 mesh" (emphasis added). Support for the amendment to claim 1 can be found in originally filed claims 10-12 and in paragraph [0014].

Claim 21 is similar to claim 1, except that it recites "isolating for use in agricultural applications granules of superabsorbent polymer product having a density that is between about 30 pounds per cubic foot and about 35 pounds per cubic foot" (emphasis added). Support for newly added independent claim 21 can be found in paragraph [0014].

Newly added claims 22-29 recite various methods of forming granules of superabsorbent polymer product. Claim 22 recites "granularizing the starch graft copolymer by adding an alcohol solution to the starch graft copolymer and thereby forming granules of superabsorbent polymer product." Support for newly added independent claim 22 can be found in paragraph [0011]. Dependent claims 23, 24, 25, and 26 recite different ways of practicing the method of claim 22. Support for newly added dependent claims 23, 24, 25, and 26 can be found, respectively, in paragraphs [0021], [0022], [0024], and [0023].

Newly added claim 27 recites "precipitating the starch graft copolymer by adding an acidic solution to the starch graft copolymer." Support for newly added independent claim 27 can be found in paragraph [0013].

Newly added claim 28 recites "pelletizing the starch graft copolymer to form pellets of superabsorbent polymer product that have a pellet size that is between about 5 mesh and about 25 mesh." Support for newly added independent claim 28 can be found in paragraph [0021].

Newly added claim 29 recites "passing the starch graft copolymer through a die plate and thereby forming granules of superabsorbent polymer product." Support for newly added independent claim 29 can be found in paragraph [0024].

Applicants thank Examiner Tran in advance for the courtesy of conducting a personal interview with Applicants' attorney, Sandra K. Szczerbicki, and applicant Dr. William Doane at 10am on Tuesday, July 12, 2005.

Claims 11 and 12 stand rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement. The Examiner states that "[c]laims 11 and 12 depend on claim 12" (page 2). Applicants believe that the Examiner meant to state that claims 11 and 12 are dependent on claim 10. The Examiner further states that "claims 11 and 12 recite a particle size of between about 5 to about 50 mesh and about 8 to about 25 mesh respectively. Whereas claim 10 recites a particle size of about 200 mesh or less. Since particle size is inversely proportional to the mesh size, the claims are in conflict and are scientifically impossible" (pages 2-3).

MPEP Section 2164.01 states that "[t]he standard for determining whether the specification meets the enablement requirement was cast in the Supreme Court decision of *Mineral Separation v. Hyde*, which postured the question: is the experimentation needed to practice the invention undue or unreasonable?" (citations omitted). Applicants assert that no undue or unreasonable experimentation would be necessary in order for a skilled practitioner to practice the invention described in paragraph 14 and recited in claims 10-12. For this reason, applicants dispute the Examiner's rejection. However, because applicants have canceled claim 10 and because claims 11 and 12 were amended to depend from claim 1, applicants believe that the Examiner's rejection and the applicants' arguments in response thereto are moot.

Claims 1-14 and 20 stand rejected under 35 U.S.C. § 102(b) for anticipation by U.S. Patent No. 4,134,863 to Fanta et al. ("Fanta") and by U.S. Patent No. 4,323,487 to Jones et al. ("Jones"), for substantially the same reasons stated in the August 18, 2004 and January 11, 2005 Office actions. As stated by the Examiner, "[a]pplicants contend that neither Fanta nor Jones teaches an absorbent composition in granular form" (January 11, 2005 Office action, page 4). However, the Examiner states that "Fanta and Jones do teach granularizing of the absorbent copolymer" (*id.*).

The meaning of the term "granule" forms a basis for applicants' arguments disputing the anticipation rejections. Webster's Third New International Dictionary (page 989 (2002)) does not provide a definition for the word "granule," but it provides the following related definitions:

**Granulate:** "to form or crystallize into grains, granules, or small masses; make granular."

**Granular Snow:** "small pellets or grains of precipitation resembling snow."

These definitions suggest that granules are similar to grains, small flakes, and pellets.

The Examiner appears to equate the words "particle" and "powder" with the word "granules." Applicants dispute the Examiner's equation of these words. Webster's Third New International Dictionary (pages 1646 and 1778 (2002)) provides the following definitions for the words "particle" and "powder":

**Particle:** "a very small portion of something material : minute quantity; tiny fragment. . . : the smallest possible portion or amount of something."

**Powder:** "a substance consisting of ground, pulverized, or otherwise finely dispersed solid particles."

Based on these definitions and their use in polymer chemistry, applicants assert that the words "particle," "powder," and "granule" have differing meanings. Specifically, applicants assert that the size of an individual granule is larger than the size of an individual particle or unit of powder. Applicants will now address each of Fanta and Jones.

Regarding the Examiner's rejections based on Fanta, applicants submit that Fanta does not describe all of the elements of amended independent claim 1 and newly added independent claims 20, 21, 22, 27, 28, and 29. Applicants assert that Fanta does not describe (1) "granularizing the precipitated starch graft copolymer to form granules of superabsorbent polymer product," as recited in amended independent claim 1 and similarly stated in newly added independent claims 21, 22, 27, 28, and 29; or (2) "isolating for use in agricultural applications granules of superabsorbent polymer product having a granule size that is between about 5 mesh and about 25 mesh," as recited in amended claim 1 and similarly stated in newly added claims 22, 27, 28, and 29; or (3) "isolating for use in agricultural applications granules of superabsorbent polymer product having a density that is between about 30 and about 35 pounds per cubic foot," as recited in newly added independent claim 21.

Briefly, applicants address the terms "granularizing" and "granules." Fanta does not disclose the process of granularizing or the formation of granules. Rather, Fanta describes the formation of films of absorbent composition that can be Wiley-milled to form smaller-sized films capable of passing through a 20-mesh screen (col. 8, lines 34-35). Fanta forms these films by spreading "the swollen rubbery solid . . . onto a 'Teflon' tray and allow[ing it] to air dry to a film" (col. 8, lines 61-62 and similarly described in

Examples 1, 3, 4, 5, 6, 8, 9, 10); "drum dried" (col. 13, line 20 and similarly described in Examples 25, 29, 31, and 33); or "air dried to give a film" (col. 13, line 10 and similarly described in Examples 25, 27, 29, 31, 33, 34, 36, 37, 38, and 40).

The Examiner appears to equate Wiley-milling a starch graft copolymer film to form smaller-sized films with granularizing a starch graft copolymer to form granules. Applicants respectfully disagree. To support this assertion, applicants are willing to submit, at the Examiner's request, a 37 C.F.R. § 1.132 Declaration of Dr. William M. Doane (unsigned draft attached) (the "Declaration"). As stated in paragraph 1 of the Declaration, Dr. Doane is an inventor named in Fanta. In paragraph 5, Dr. Doane states that "U.S. Patent No. 4,134,863 does not describe or teach the formation of granules of superabsorbent polymer product sized for use in agricultural applications." In paragraphs 17 and 18, Dr. Doane states that "Wiley-milling [a] film of absorbent composition . . . will not produce a granular form of the absorbent composition" and "[i]t is, in fact, impossible to form granules of starch graft copolymer by Wiley-milling films of absorbent composition." Dr. Doane also submits Exhibits A-J to show the Examiner how a film differs from a granule and how the method of granularizing recited in amended independent claim 1 (and similarly recited in independent claims 21, 22, 27, 28, and 29) differs from spreading dough on a Teflon tray to form a film, drum drying, and air drying to form a film (the methods described in Fanta).

Fanta refers to "films or particles of . . . absorbent compositions" (col. 7, lines 50-51) and "[s]wollen polymer particles" (col. 8, line 41). The Examiner appears to equate the term "particle" with the term "granule." As described above, applicants assert that the words "particle" and "granule" have different meanings, and because Fanta does not describe the formation of a granule, it does not disclose every element of amended independent claim 1. Further, applicants direct the Examiner to paragraph 22 of the Declaration, which states that "[t]he references to 'particles' in col. 7, line 50 and col. 8, line 41 of U.S. Patent No. 4,134,863 do not describe granules of absorbent composition. Rather, the references to 'particles' describe the smaller-sized particles of film . . . that are formed by Wiley-milling the larger-sized film . . . ." For this reason, applicants also assert that Fanta does not describe "isolating for use in agricultural applications granules of superabsorbent polymer product having a granule size that is between about 5 mesh and about 25 mesh," as recited in amended claim 1.

For these reasons, applicants assert that Fanta does not anticipate amended claim 1, or its dependent claims, or similarly phrased independent claims 20, 22, 27, 28, and 29, or their dependent claims.

Regarding independent claim 21, applicants assert that Fanta does not describe "isolating for use in agricultural applications granules of superabsorbent polymer product having a density that is between about 30 and about 35 pounds per cubic foot," as recited in newly added independent claim 21. The recitation in claim 21 of a density range differentiates the granules of superabsorbent polymer product recited in claim 21 from prior art flakes, powders and films, because flakes and films would have a lower density and powders would have a higher density.

Regarding the Examiner's rejections based on Jones, applicants contend that Jones does not disclose (1) "granularizing the precipitated starch graft copolymer to form granules of superabsorbent polymer product" or (2) "isolating for use in agricultural applications granules of superabsorbent polymer product having a granule size that is between about 5 mesh and about 25 mesh," as recited in amended claim 1 (and similarly stated in independent claims 22, 27, 28, and 29) or (3) "isolating for use in agricultural applications granules of superabsorbent polymer product having a density that is between about 30 and about 35 pounds per cubic foot," as recited in newly added independent claim 21.

The Examiner states that Jones' references to a "dry granular form of hydrolyzed starch polyacrylonitrile graft copolymer" (col. 4, lines 11-13) and "granulation of the product" (col. 2, line 11) anticipates the claims of the present application. Applicants respectfully disagree.

First, Jones does not describe "granules of superabsorbent polymer product having a granule size that is between about 5 mesh and about 25 mesh," as recited in amended claim 1, or "granules of superabsorbent polymer product having a density that is between about 30 and about 35 pounds per cubic foot," as recited in newly added independent claim 21. At col. 2, lines 11-12, Jones refers to the fact that "large granular material is not always feasible," but does not define the size constraints of the term "large granular material." Further, none of the prior art references cited by Jones define the term "large granular material."

Second, applicants assert that any reference to a granular product in Jones is not enabled. "To serve as an anticipating reference, the reference must enable that which it is asserted to anticipate. A claimed invention cannot be anticipated by a prior art reference if

the allegedly anticipatory disclosures cited as prior art are not enabled." *Elan Pharm., Inc. v. Mayo Found. for Med. Educ. & Research*, 346 F.3d 1051, 1054 (Fed. Cir. 2003) (citation omitted) (see also *Bristol-Myers Squibb Co. v. Ben Venue Labs., Inc.*, 246 F.3d 1368, 1374, 58 USPQ2d 1508, 1512 (Fed. Cir. 2001) ("To anticipate, the reference must also enable one of skill in the art to make and use the claimed invention."). Enablement requires that "the prior art reference must teach one of ordinary skill in the art to make or carry out the claimed invention without undue experimentation." *Minn. Mining & Mfg. Co. v. Chemque, Inc.*, 303 F.3d 1294, 1306, 64 USPQ2d 1270, 1278 (Fed. Cir. 2002). "The determination of what level of experimentation is "undue," so as to render a disclosure non-enabling, is made from the viewpoint of persons experienced in the field of the invention." *Elan Pharm.*, 346 F.3d at 1055. Applicants refer the Examiner to paragraphs 31-33 of the February 22, 2005 Declaration of William M. Doane in which Dr. Doane stated that "[a]s one of skill in the art, I declare that, at the time of filing of the Jones patent application, no method of forming granules of precipitated starch graft copolymer was known in the art. Thus the formation of granules of superabsorbent product was not "well known in the art."

For these reasons, applicants assert that Fanta does not describe each and every element of amended independent claim 1, independent claim 20, and newly added independent claims 21, 22, 27, 28, and 29. Applicants choose to rely on the arguments presented above with respect to amended independent claim 1 and newly added independent claim 22 to support the patentability of their rejected dependent claims.

Independent claim 20 recites "[a] superabsorbent polymer product for use in agricultural applications made in accordance with the method of claim 1." Thus the above arguments made with reference to amended independent claim 1 apply to independent claim 20.

Applicants believe the application is in condition for allowance and respectfully request the same. Applicants invite the Examiner to contact the undersigned by telephone, in the event that the Examiner believes there are any issues outstanding.

Respectfully submitted,

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